

ASSOCIATION BETWEEN DRINKING GOAL AND ALCOHOL USE ONE YEAR
AFTER RESIDENTIAL TREATMENT: A MULICENTER STUDY

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Abstract

This study examined whether patients' drinking goals at admission to and discharge from 12 residential alcohol use disorder treatment programmes were associated with alcohol-related outcomes at 1-year follow-up. Detoxified patients (N=289) completed assessments at admission, after treatment, and at 1-year follow-up. Drinking goals of abstinence, conditional abstinence (in principle abstinence but potential occurrence of lapses or drinking, when urges are strong), and controlled drinking changed during treatment and predicted the 1-year follow-up outcomes (abstinence, number of standard drinks, and number of days to the first alcohol use). Goals at discharge had a better predictive value. The goal of abstinence at discharge had better outcomes than conditional abstinence; the poorest had controlled drinking.

1. Introduction

Over the past three decades, a large number of studies on the treatment of alcohol use disorder (AUD) have examined and identified patient-related predictors of treatment outcome. Among consistently identified predictors such as pre-treatment level of alcohol use, dependence severity, alcohol use during treatment, psychiatric symptoms, self-efficacy, and motivation, drinking goal has emerged as a promising but understudied predictor variable (1).

A strong association between the initial preferred drinking goal and successful treatment outcome has been reported (2-7). Individuals seem to select the goal that best fits their needs and circumstances, which is likely to result in a better outcome. For example, patients having a goal preference of achieving abstinence reported more abstinence; those choosing a non-abstinence goal were more likely to report non-problem drinking at follow-up.

However, different studies on follow-up outcomes of drinking goals have contradictory results. Elal-Lawrence and colleagues reported that patients' drinking goals at the beginning of treatment were unrelated to outcome at 1-year follow-up, but their goals at the end of treatment did predict successful outcome at follow-up (8, 9). In addition, previous studies have revealed that during treatment, patients' goals frequently shift in either direction, from moderation to abstinence and vice versa (1, 4, 10-13). Further, patients with abstinence as their goal may achieve non-problem drinking, and patients with controlled drinking as their goal sometimes achieve abstinence. Goal preferences seem to be a varying concept, with one-third of successful outcomes achieved inconsistently with patients' initial goal preferences (1).

This paper describes a multicentre study with a sample of alcohol-dependent during residential treatment abstinent patients conducted to examine whether patients' drinking goals at admission to and discharge from 3-month residential alcohol treatment programmes were

associated with alcohol-related outcomes at 1-year follow-up. We also investigated how many patients changed their goal while in residential treatment, and we expanded the 2 groups ‘goal of abstinence’ and ‘goal of controlled drinking’ to 3 groups with the addition of ‘goal of conditional abstinence’ (i.e. individuals who want to achieve abstinence but are aware of the potential for lapses). To estimate the pure contribution of drinking goals to outcomes, we controlled for most of the significant predictors that were identified in a systematic review by Adamson and colleagues: gender, employment, amount of alcohol consumption before detoxification, alcohol dependence severity, psychiatric symptoms, and motivation for treatment (14). This is the first study that examines treatment goals at admission and at discharge from residential treatment programmes focussing on the treatment goal of abstinence.

2. Material and Methods

2.1 Patients

Of 1088 patients with substance use disorders (SUDs) entering into 1 of 12 residential treatment programmes, 805 agreed to participate in this study and gave written informed consent. Of these, 587 patients had AUD only, 415 patients completed the study inventories at admission, at discharge, and at the 1-year follow-up. We excluded patients who consumed alcohol during residential treatment, a variable associated with lower abstinence rates at follow-up (15) and to make sure that patients’ decision for one of the three drinking goals is not affected by current alcohol use. The final sample included 289 abstinent patients during treatment.

This sample was divided into 3 groups according to patients’ drinking goals: (i) *goal of abstinence*, those who had set alcohol abstinence without any toleration for lapse as their individual goal; (ii) *goal of conditional abstinence*, those who wanted to achieve abstinence

but were aware of the potential for lapses or who wanted to be able to drink occasionally, when the urges are very strong; and (iii) *goal of controlled drinking*, those who planned controlled drinking after discharge. There were no significant differences between the 3 groups regarding age, gender, marital or employment status, previous in- or outpatient addiction treatment, or mental health treatment (Table 1).

2.2 Procedure

Patients completed an Intake Information Form (IIF) upon admission to AUD treatment, a Discharge Information Form (DIF) after completing residential treatment, and a Follow-up Information Form (FIF) 1 year after discharge. The Ethics Committee of the Canton of Bern approved the study (Proposal-Nr: 109/99).

2.3 Inpatient alcohol use disorder treatment programmes

Twelve standard-practice residential abstinence-oriented treatment programmes for patients with AUD were selected. These programmes were representative of the conditions and general medical approach found in the German-speaking part of Switzerland. Treatment was delivered by staff consisting of psychiatrists, psychologists, nurses, and social workers. The scheduled duration of stay was 3 months. The programmes were financed either by obligatory public health insurance, or by support from the Canton or the community (intended for patients unable to afford the health insurance premiums). Programme characteristics have been described in more detail and compared with residential AUD programmes affiliated with the US Department of Veterans Affairs Health Care System in 2 publications by Moggi and colleagues (16, 17). The main differences are as follows: Swiss programmes offered more individual and fewer group sessions, were much less 12-step oriented, favoured the psychosocial model of understanding SUDs instead of the disease model, and were five times longer than US programmes.

2.4 Assessment

2.4.1 Patients' characteristics at admission

At admission, patients were screened and completed the IIF, which collected information about demographic characteristics (i.e. age, gender, marital status, education, and employment status), psychiatric symptoms, and indices of alcohol use, including dependence severity. Further, participation in any inpatient or outpatient AUD or mental health treatment programme, including self-help activities, during the previous 2 years was recorded (yes/no). Individuals' alcohol and drug use during the 3 months before index treatment were assessed by 15 items adapted from the Health and Daily Living Form (HDLF) (18) and the Treatment Outcome Prospective Study (TOPS) (19). Patients were asked about the amount and frequency of alcohol consumption and the use of illicit drugs. Severity of alcohol dependence was measured with the Alcohol Dependence Scale (ADS; 9 items, severity scores ranged from 0 to 36) (20). Psychiatric symptoms during the 3 months prior to the index stay were recorded using the Brief Symptom Inventory (BSI (21); German version by (22); general symptoms index GSI scores ranged from 0 to 4). Treatment motivation was evaluated by summing up the scores of the Taking Steps subscale of the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; subscale scores ranged from 8 to 48) (23).

2.4.2 Patients' characteristics at discharge

Alcohol use during treatment was captured by the question 'Have you drink alcohol since entering this treatment programme?' If patients admitted having used alcohol, they were asked to report the amount and frequency of alcohol consumption. The completed DIF comprised the same indices of substance use and psychological and social functioning as at admission, including the preference of drinking goal and self-efficacy with respect to abstinence (SCQ (24, 25); scores ranged from 0 to 5). Drinking goals were assessed by asking the patients

whether their personal drinking goal is (i) total abstinence without any alcohol use again or (ii) abstinence with occasional slips, potential lapse(s) or use, when the urges are very strong or (iii) controlled drinking in a responsible manner.

2.4.3 Outcome at 1-year follow-up

To measure the treatment outcome we focused on 3 variables: (i) abstinence, defined as no alcohol consumption during the 12 months following residential treatment (dichotomous variable of yes/no); (ii) consumption, measured as the number of drinks per typical drinking day during the 3 months before completing FIF, with 10 g ethanol defined as 1 standard drink; and (iii) time in days after discharge before the first alcoholic drink was consumed.

2.5. Statistical Analysis

An analysis of variance (ANOVA) for continuous data and χ^2 tests for categorical data were computed to compare the effects of the 3 drinking-goal groups on patients' characteristics at admission. The change in drinking goals from admission to discharge was analysed with a χ^2 test. To identify the significant predictors of alcohol use at 1-year follow-up, we performed stepwise logistic analysis (for categorical variables) and linear regression analysis (for continuous variables) of the primary outcomes, using all predictors (gender, employment, inpatient and outpatient treatment for AUD in the 2 years prior to admission, amount of alcohol consumption before detoxification, alcohol dependence severity, psychiatric symptoms, treatment motivation, and the 3 drinking goals). To analyse the contribution of the 3 drinking goals at discharge and at admission to the respective outcomes, we conducted, for significant predictors in the stepwise regression models, a logistic regression for abstinence at 1-year follow-up, a linear regression for the number of standard drinks among those who were drinkers, and a Cox regression for the time to the first drink after discharge from the

residential treatment programmes. In all 3 regression models, we used abstinence as the reference. The number of patients in the analyses changed due to missing data.

3. Results

In total, 289 alcohol-dependent patients (89 women) with a mean age of 47.3 years ($SD = 9.25$) completed the study. Overall, the IIF indicated that 34.3% had a goal of exclusive abstinence, 47.4% had a goal of conditional abstinence, 18.3% of patients preferred controlled drinking. At discharge, 38.7% had the goal of exclusive abstinence, 48.0% had the goal of conditional abstinence, and 13.4% of patients had the goal of controlled drinking. Table 1 shows the patients' characteristics and predictor variables at admission to and discharge from residential treatment for each drinking goal. Some patients changed their drinking goals from admission to discharge ($\chi^2 = 139.42, p < .001$). However, more than half of the patients showed a stable drinking goal: 72.6% retained abstinence as a drinking goal, 68.8% retained the goal of conditional abstinence, and 54.3% retained the goal of controlled drinking (Table 1).

Table 1

At 1-year follow-up, 43.9% ($n=121$) of the 280 patients included in the analysis remained abstinent. For the logistic regression with abstinence as the dependent variable, we first included all predictors: gender ($b = -0.11, p = .73$), employment ($b = 0.19, p = .51$), inpatient ($b = -.721, p = .01$) and outpatient treatment ($b = -.05, p = .85$) for AUD in the 2 years prior to admission, amount of alcohol consumption before detoxification ($b = -0.01, p = .68$), alcohol dependence severity ($b = 0.00, p = .99$), psychiatric symptoms ($b = 0.24, p = .33$), and treatment motivation ($b = -0.03, p = .35$). In addition, we included drinking goals at admission with abstinence as the reference variable (controlled drinking: $b = -0.16, p = .75$; conditional

abstinence: $b = 0.20$, $p = .55$) and drinking goals at discharge (controlled drinking: $b = 2.04$, $p < .001$; conditional abstinence: $b = 0.78$, $p = .02$). Next, we included the drinking goals at discharge and the only significant predictor AUD inpatient treatment in a new model that had the highest explained variance (Table 2).

Table 2

The drinking goals at admission (controlled drinking: adjusted OR = 3.04, 95% CI 1.45–6.22, $p = .01$; conditional abstinence: adjusted OR = 1.82, 95% CI 1.08–3.07, $p = .025$) controlled for the significant predictor of AUD inpatient treatment (adjusted OR = 0.52, 95% CI 0.31–0.86, $p = .01$) was also a significant model ($R^2 = .079$ [Nagelkerke] and .059 [Cox and Snell]), $\chi^2(3) = 17.51$, $p < .001$). However, the predictors did not explain abstinence so well as the model including drinking goals at discharge did.

Results of the linear regression analysis with number of standard drinks after 1 year (mean standard drink 4.03, $SD = 7.3$) as the dependent variable and drinking goals at discharge as independent variable are shown in Table 3. Unlike the logistic regression analysis, none of the predictor variables were significant (including AUD inpatient treatment: $b = 1.76$, $p = .09$).

Table 3

Drinking goals at admission predicted the number of standard drinks at 1-year follow-up, but not as well as the drinking goals at discharge did (number of drinks before admission, drinking goal at admission: $\Delta R^2 = .020$, $F(2, 276) = 2.74$, $p = .066$).

A total of 55.7% (n=158) of the patients reported the time to first drink after discharge from treatment (mean 93 days, $SD = 87.2$). Of these patients, Cox regression analyses showed that the drinking goals of ‘controlled drinking’ and ‘conditional abstinence’ at discharge were associated with a shorter time to alcohol use compared to the drinking goal of ‘abstinence’, after controlling for AUD inpatient treatment before admission (AUD inpatient treatment relative risk = 1.24, 95% CI = 1.05–1.46, $p = .012$; ‘controlled drinking’ relative risk = 3.37, 95% CI = 2.09–5.45, $p < .001$; ‘conditional abstinence’ relative risk = 1.74, 95% CI = 1.19–2.55, $p = .004$; $\chi^2 = 31.756$, $p < .001$; Figure 1).

Figure 1

Drinking goals at admission were also associated with the time to first alcohol use but not as strongly as drinking goals at discharge were (AUD inpatient treatment relative risk = 1.24, 95% CI = 1.06–1.46, $p = .007$; ‘controlled drinking’ relative risk = 2.08, 95% CI = 1.34–3.23, $p = .001$; ‘conditional abstinence’ relative risk = .1.39, 95% CI = 0.95–2.01, $p = .087$; $\chi^2 = 17.70$, $p = .087$).

4. Discussion

We examined the predictive value of patients’ drinking goals at admission to and discharge from 12 standard three-month residential AUD treatment programmes in the German-speaking part of Switzerland on 1-year follow-up drinking outcomes. Drinking goals (i.e. abstinence, conditional abstinence, and controlled drinking) predicted abstinence, number of standard drinks per typical drinking day, and time in days after discharge to the first alcoholic drink at the 1-year follow-up.

A total of 45.7% of the patients changed their drinking goals during AUD treatment. The predictive value of drinking goals was notably higher at discharge than at admission. Several studies have revealed that goals change during the treatment process(1, 6, 13). Elal-Lawrence and colleagues (1987) found that after completion of treatment, the drinking goal at discharge was a more stable outcome predictor than was the drinking goal at admission. This is also true for other important predictors of treatment outcomes. For example, Heather and Mc Cambridge (2013) found that motivations to change substance use behaviour change during AUD treatment and that only the stage of change at discharge, not that at admission, predicted the drinking outcome at 1-year follow-up (26).

Patients with the goal of abstinence showed the highest abstinence rate at the 1-year follow-up, followed by patients with the goal of conditional abstinence at discharge. Patients with the goal of controlled drinking had the lowest rate of abstinence, which is self-explaining since abstinence was not their goal. We cannot determine whether patients with the goal of conditional abstinence were more likely to drink than patients with the goal of abstinence because they allowed themselves to consume alcohol at pre-defined occasions (e.g. birthday, Christmas) or because they remained abstinent until they yielded to craving and started drinking.

Patients with the goal of abstinence drank the fewest standard drinks per typical drinking day at 1-year follow-up, followed by patients with the goal of conditional abstinence and controlled drinking, the last having the highest amount of standard drinks. This finding differs from the literature, in which patients with the goal of abstinence showed more abstinent days but heavier alcohol use when drinking did occur (1, 6, 13). Our assessment may not have been able to detect the abstinence violation effect that often leads to very heavy drinking (27). We asked about a typical drinking day estimated on the basis of average alcohol consumption

during the 3 months before the 1-year follow-up. If we had recorded the amount of alcohol use right after lapses, we might have found differences in alcohol consumption between the 3 groups that were similar to those in the literature (1, 6, 13). Alternatively, after having a lapse or relapsing, patients with the goal of abstinence may have resumed abstinence, resulting in a lower mean value of alcohol consumption during the time elapsed. Patients with the goal of controlled drinking did not learn controlled drinking while in abstinence-orientated residential treatment programmes, which may have been the reason that they seemed to start drinking early after the end of residential treatment, with the result that they drank more on average at 1-year follow-up.

After discharge, patients with the goal of abstinence showed the highest number of abstinent days before the first drink was consumed, again followed by patients with the goal of conditional abstinence and, as expected, patients with the goal of controlled drinking. This result confirms the findings of Dunn and Strain (2013) who found that patient with abstinence as drinking goal had significantly more weeks without alcohol compared to the others. The finding that patients with the goal of conditional abstinence started drinking earlier than patients with the goal of abstinence could be a result of persistent ambivalence, first regarding their goal of maintaining abstinence and then concerning the decision to stop drinking after lapsing.

In our statistical analyses, none of the key predictors identified by Adamson and colleagues (2009) were found to be significant predictors of treatment outcome except for inpatient treatment before the residential AUD programmes. However, follow-up outcomes in most of the studies reviewed by Adamson were assessed at least 3 months after treatment completion; in contrast, our study had a 1-year follow-up assessment. Adamson and colleagues' consistent predictors may have failed to reach significance in our study because they reported shorter

periods between discharge from treatment and follow-up. Predictor power mostly decreases over time (14).

A limitation of the present study was that outcome data were self-reported rather than measured by objective methods or biochemical markers of alcohol use. Del Boca and Darkes noted that self-report measures of alcohol use, which are relatively inexpensive, non-invasive, and acceptable to respondents, have demonstrated reasonable levels of reliability and validity (28). This result is particularly true when patients are assessed by research staff not associated with the treatment programme, and when patients are aware that their data were made anonymous, as was the case here. However, future studies should include objective measures of alcohol consumption. Moreover, patients in abstinence-oriented residential treatments were perhaps under subtle pressure to say that they preferred a goal of abstinence. The results may be valid only for the German-speaking part of Switzerland where the study was conducted so that further research is required to confirm whether they would also hold true for other countries with different health care systems. However, our results were similar to the findings of Bujarski and colleagues (2013), although there were some differences: their study was conducted in the US, comprised a much larger sample, included outpatient settings, and patients were not excluded when consuming alcohol during treatment.

In conclusion, this study highlighted that personal drinking goal at discharge is a crucial factor in predicting AUD treatment outcome at 1-year follow-up. Patients with abstinence as the drinking goal at discharge had a better 1-year follow-up outcome in terms of abstinence, number of standard drinks in case of recurrence of alcohol drinking, and time to first alcohol use than did patients with the goal of conditional abstinence. Patients with the goal of controlled drinking had the poorest outcome. These results raise important questions about

how treatment can potentially influence drinking goals and whether treatment approaches might be varied to adapt for individuals with different drinking goals.

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